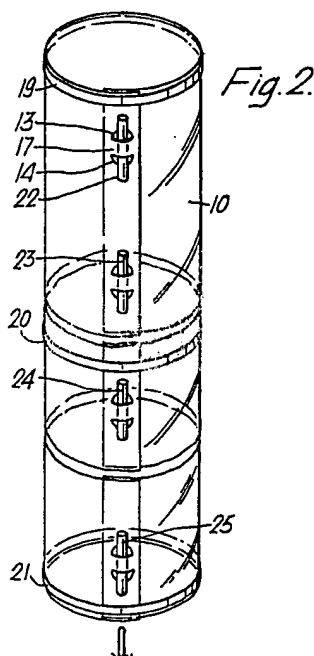


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(54) Plant protection devices

(57) A plant protection device comprising a sheet 10 of flexible transparent plastics material provided with a plurality of pairs of holes 13, 14 adjacent opposite edges. The sheet is wrapped round to form a sleeve which is temporarily retained in the right position by rings 19, 20 and 21 and thereafter tubes 22 to 25 are inserted through the apertures and under the bridges 17 formed between pairs. Thereafter a rod passed through the tubes, having been stuck in the ground and the tubes can then be moved away from under the bridges so that the rod retains the assembly in place.



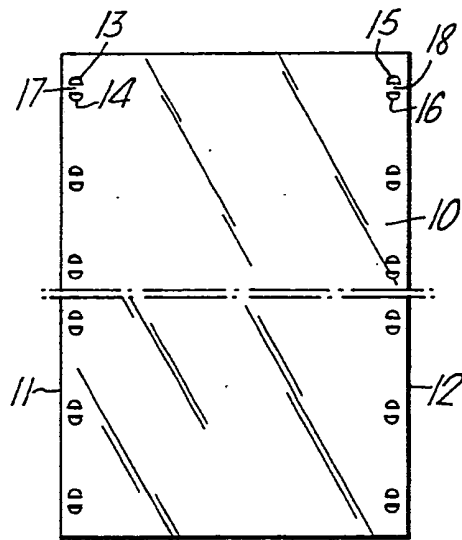


Fig. 1.

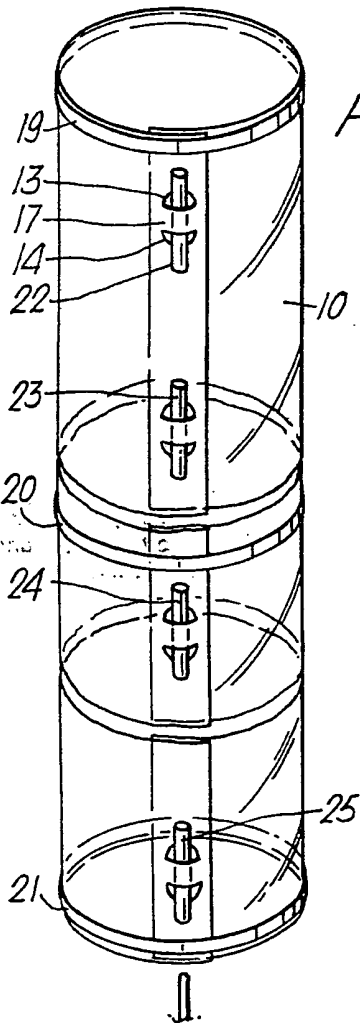


Fig. 2.

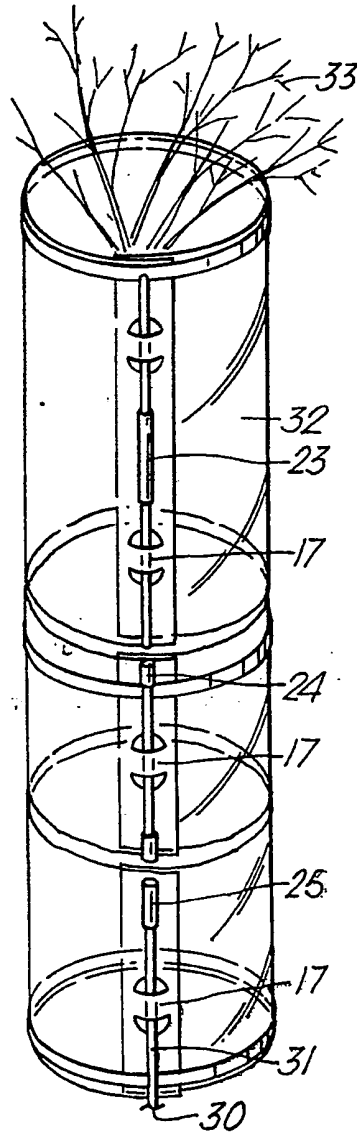


Fig. 3.

## SPECIFICATION

## Plant protection devices

5 The present invention relates to plant protection devices. A number of plant protection devices have been devised, particularly for protecting young trees for a few years after they have been planted. Very recently, these plant protection devices have included  
 10 a sheet of generally transparent material bent round to form a sleeve. One particular arrangement involves a corrugated polypropylene plastics material which is folded round and is secured to a wooden stake by wires, the corrugated material being secured to itself,  
 15 to form the sleeve, by staples or by welding. Another construction involves a PVC tube which is secured to a stake and the edges of the PVC material are secured to one another to form the sleeve by means of staples and a similar arrangement has been applied when the  
 20 plastic material is a mesh reinforced polyethylene.

None of these devices have proved satisfactory particularly because the material tends to tear at the location of the staples and the construction has been found to be not at all robust.

25 It is now proposed, according to the present invention, to provide a plant protection device comprising a sheet of flexible plastics material having adjacent each of two opposite edges a plurality of aligned pairs of apertures therein, so positioned that,  
 30 when the sheet is formed into a sleeve with the edges overlapping, the holes of each pair adjacent one edge overlie the holes of each pair adjacent the opposite edge, the holes of each overlying pair having formed therebetween a bridge of the two superimposed  
 35 layers of sheet material, a separate tube insertable under each bridge and a rod which can be passed through all of the aligned tubes so inserted, the rod being capable of being forced into the ground to hold the device in place around a plant.

40 With such a structure it is very easy for the man in the field to form the protection device even in unpleasant weather conditions and with gloves on. The tubes can readily be inserted into the apertures and once the tubes are in position it is a relatively easy  
 45 job to slide the rod through the aligned tubes.

Of course, instead of using simply a single rod and a single sheet of material it is possible to use more sheets to surround a larger plant. Thus, according to another aspect of the present invention there is  
 50 provided a plant protection device comprising a plurality of sheets of flexible plastics material, each having adjacent each of two opposite edges a plurality of aligned pairs of apertures therein, so positioned that when the edges of two sheets are placed so that  
 55 they are overlapping, the holes of each pair adjacent the edge of one sheet overlie the wholes of each pair adjacent the edge of the other sheet, the holes of each overlapping pair having formed therebetween a bridge of the two superimposed layers of sheet  
 60 material, a separate tube insertable under each bridge to hold the edges of adjacent sheets together and to form all of the sheets into a sleeve, and a separate rod

which can be passed through each set of aligned tubes so inserted, the rods being capable of being forced  
 65 into the ground to hold the device in place around a plant.

With either type of construction, the tubes are preferably capable of being moved axially of the associated rod, after the rod has been passed through  
 70 all of the adjacent tubes, so that the tubes are disengaged from under the bridges. This has the advantage that while the tubes are very useful in inserting the rods through the apertures, they tend somewhat to buckle the sheet material and when they  
 75 are removed under the bridges, they assist in holding the sheets in place.

Advantageously, the apertures are all D-shaped, the straight edges of a pair of apertures being adjacent one another so as to define substantially parallel sides  
 80 of the bridges. By having the apertures D-shaped, one facilitates the insertion of the tubes through them and under the bridges, and one also ensures that there is little likelihood of the plastics material tearing.

In order to make considerably easier the alignment of the apertures, preformed axially spaced rings are preferably provided which can be positioned around the sleeve to define the shape of the sleeve. The sleeve  
 85 will then spring back outwardly when it has been inserted the rings to the shape defined by the rings, which is usually circular, so that a cylindrical plant protector sleeve is provided. The rings may be formed of a plastics material which can preferably be transparent as also is the sheet material itself.

In order that the invention may more readily be understood, the following description is given, merely by way of example, reference being made to the accompanying drawings, in which:—

Figure 1 is a plan view of one embodiment of sheet material suitable for use in forming a plant protector  
 100 according to the present invention;

Figure 2 is a perspective view showing the plant protector during its construction; and

Figure 3 is a perspective view showing the plant protector in place around a plant.

105 In Figure 1 there is illustrated a sheet 10 of flexible, transparent, plastics material such as that sold under the registered Trade Mark "Melinex". The sheet is generally rectangular and has opposite side edges 11, 12 and adjacent these side edges are a plurality of axially spaced pairs of apertures 13, 14 and 15, 16. The apertures are in the form of D-shaped holes defining therebetween ridges 17, 18.

In use of the sheet material one folds the sheet round to a generally cylindrical form and inserts the  
 115 sleeve thus formed into two or preferably three rings 19, 20, 21. These rings are preferably formed of a rigid transparent plastics material which is of circular form initially. They could, on the other hand, be formed of flexible material, which will naturally take the form of a circle when the material 10 is inserted therewithin.

120 Tubes of a very small diameter and indicated by the reference numerals 22, 23, 24, 25 are inserted under the bridges formed by the superimposed two layers of bridge material 17. The tubes 22, 25 thus hold the

sheet material in this form accurately and the insertion of the tubes can be carried out very simply, even in unpleasant wet muddy conditions and with gloves on.

Having assembled the arrangement like this, one then inserts into the ground 30 a support rod 31 which is of an external diameter less the internal diameter of the tubes 22 to 25. The sleeve 32 which has been formed by the flexible material 10 and the tubes 22 to 25 is then offered up to the rod 31 and the tubes 25, 24, 23 and 22 are passed in turn over the rod. This is the arrangement shown in Figure 2. Thereafter, the tubes 25, 24 and 23 are moved up so that they are disengaged from the bridges 17 and lie against the plastics material. The top tube 22 can be taken away. The thus formed arrangement fits very well around the plant which has been indicated generally by 33 and has been installed in a very simple manner. Because of the D-shape of the holes 13 to 16, there is little tendency for the plastics material to rip or tear in use. If one wishes to make a larger plant protector, one can use two or more sheets and adjacent sheets can be assembled in like manner to that described above, but the total assembly is formed into a ring to form a larger sleeve.

## 25 CLAIMS

1. A plant protection device comprising a sheet of flexible plastics material having adjacent each of two opposite edges a plurality of aligned pairs of apertures therein, so positioned that, when the sheet is formed into a sleeve with the edges overlapping, the holes of each pair adjacent one edge overlap the holes of each pair adjacent the opposite edge, the holes of each overlying pair having formed therebetween a bridge of the two superimposed layers of sheet material, a separate tube insertable under each bridge and a rod which can be passed through all of the aligned tubes so inserted, the rod being capable of being forced into the ground to hold the device in place around a plant.

2. A plant protection device comprising a plurality of sheets of flexible plastics material, each having adjacent each of two opposite edges a plurality of aligned pairs of apertures therein, so positioned that when the edges of two sheets are placed so that they are overlapping, the holes of each pair adjacent the edge of one sheet overlap the holes of each pair adjacent the edge of the other sheet, the holes of each overlapping pair having formed therebetween a bridge of the two superimposed layers of sheet material, a separate tube insertable under each bridge to hold the edges of adjacent sheets together and to form all of the sheets into a sleeve, and a separate rod which can be passed through each set of aligned tubes so inserted, the rods being capable of being forced into the ground to hold the device in place around a plant.

3. A device according to claim 1 or 2, wherein the tubes can be moved axially of their associated rod, after the rod has been passed through all of the aligned tubes, so that the tubes are disengaged from under the bridges.

4. A device according to claim 1, 2 or 3, wherein the apertures are D-shaped, the straight edges of a pair of apertures being adjacent one another to define substantially parallel sides of the bridges.

5. A device according to any preceding claim,

wherein preformed axially spaced rings are positioned around the sleeve to define the shape of the sleeve.

6. A device according to claim 5, wherein the rings are formed of a rigid material.

7. A device according to claim 6, wherein the rings are circular.

8. A device according to any preceding claim, wherein the or each flexible sheet is formed of a transparent plastics material.

9. A device according to claim 5, 6 or 7 and according to claim 8, wherein the rings are formed of a transparent plastics material.

10. A plant protection device substantially as hereinbefore described, with reference to, and as illustrated in the accompanying drawings.

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